EZ Connect

Wireless PCI Adapter

- ◆ 11 Mbps data rate: provides alternative for wired LANs that can dramatically cut costs
- ♦ Working range up to 100 ft (30 m) at 11 Mbps, 1500 ft (450 m) at 5.5 Mbps and lower
- Point-to-point and point-to-multipoint access
- Seamless connectivity to wired Ethernet LANs augments existing networks quickly and easily
- Direct Sequence Spread-Spectrum (DSSS) technology provides robust, interference-resistant and secure wireless connection
- Supports a wide range of systems (Win95/98/NT/ME/2000)
- ♦ Easy installation
- Built-in antenna



User Guide SMC2602W



The easy way to make all your network connections

Networks 6 Hughes Irvine, CA 92618

Phone: 1-800-SMC-4-YOU

01-111232-001

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Limited Lifetime Warranty

Complete warranty information for all SMC products is available on SMC's Web site at **www.smc.com**.

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THE EZ CONNECT WIRELESS PCI ADAPTER SMC2602W

SMC's EZ Connect Wireless PCI Adapter is an 11 Mbps wireless network card that seamlessly integrates with existing Ethernet networks to support applications such as mobile users or temporary conferences. This solution offers fast, reliable wireless connectivity with considerable cost savings over wired LANs (which include long-term maintenance overhead for cabling). Just plug wireless cards into your desktop PCs and start networking.

Using this card in conjunction with SMC's EZ Connect Wireless access point, you can create an instant network that integrates seamlessly with 10 Mbps Ethernet LANs. Moreover, moving or expanding your network is as easy as moving or installing additional access points—no wires!

PACKAGE CHECKLIST

The EZ Connect Wireless PCI Adapter package includes:

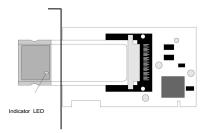
- 1 EZ Connect Wireless PCI Adapter (SMC2602W)
- 1 driver diskette
- 1 utility diskette
- This User Guide

Please register this product and upgrade product warranty at www.smc.com.

Please inform your dealer if there are any incorrect, missing or damaged parts. If possible, retain the carton, including the original packing materials. Use them again to repack the product in case there is a need to return it for repair.

HARDWARE DESCRIPTION

SMC's EZ Connect Wireless PCI Adapter supports an 11 Mbps half-duplex connection to Ethernet networks. This adapter is fully compliant with 2.4 GHz DSSS CSMA/CA wireless networking as defined in IEEE 802.11b. Support is provided for Windows 95/98/NT/Me/2000.



Applications

The EZ Connect Wireless products offer a fast, reliable, cost-effective solution for wireless client access to the network in applications such as:

- Remote access to corporate network information
 - E-mail, file transfer and terminal emulation
- Difficult-to-wire environments
 Historic or old buildings, asbestos installations, and open areas where wiring is difficult to employ
- Frequently changing environments
 Retailers, manufacturers and banks who frequently rearrange the workplace and change location

Temporary LANs for special projects or peak time

Trade shows, exhibitions and construction sites which need a temporary setup for a short time period. Retailers, airline and shipping companies who need additional workstations for a peak period. Auditors who require workgroups at customer sites

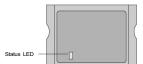
Access to databases for mobile workers

Doctors, nurses, retailers, white-collar workers who need access to databases while being mobile in the hospital, retail store or office campus

 SOHO (Small Office and Home Office) users SOHO users who need easy and quick installation of a small computer network

LED Indicators

The EZ Connect Wireless PCI Adapter includes one status LED indicator, as described in the following figure and table.



Mode	Status	Description
AdHoc	Flashing	Indicates that the PCI Adapter is operating in AdHoc mode.
Infrastructure	Flashing	Indicates that the PCI Adapter is browsing active access points.
	On	Indicates a valid connection to an access point.

System Requirements

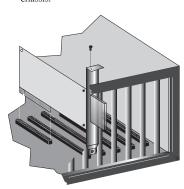
Before you install the EZ ConnectWireless PCI Adapter, check your system for the following requirements:

- An available PCI bus-master slot in your computer.
- Windows 95/98/NT/ME/2000 (Have the Windows installation CD-ROM ready for use during installation).
- A minimum of 500 Kbytes of free disk space for installing the driver and utility program.
- Another IEEE 802.11b-compliant device installed in your network, such as the SMC2655W Wireless Access Point, or the SMC 2632W Wireless PC Card.

Installation

Warnings:

- Network cards are sensitive to static electricity. To protect the card, always touch the metal chassis of your computer before handling the card.
- Backup your driver diskette and use the copy as the working diskette to protect the original from accidental damage.
- Do not remove the PCI adapter from, or plug it into, the computer while it is powered on.
- Switch off the computer, unplug the power cord, and remove the computer's cover.
- 2. Select an unused PCI bus-master slot and remove its protective bracket.
- Carefully insert the card and press until all the edge connectors are firmly seated inside the slot. Then, screw the card's bracket securely into the PC's chassis.



- 4. Install the appropriate network driver for your operating system. Drivers can be found on the driver diskette. See "Driver Installation" for more information.
- 5. Install the configuration program for your wireless PCI adapter. The SETUP.EXE file can be found on the utility diskette. See "Configuration and Diagnostic Utility" (page 20) for more information.

DRIVER INSTALLATION

The diskette labeled "Driver Diskette," that comes with the package contains all the software drivers available for the EZ Connect Wireless PCI Card. Select the driver you need for your system and refer to this guide for the installation and configuration procedure. Any new or updated drivers can be downloaded from SMC's Web site at http://www.smc.com.

WINDOWS 95/98/ME/2000 INSTALLATION

 Windows 95/98/ME/2000 will automatically detect the new hardware and prompt you to install the driver Click "Next" to find the driver.



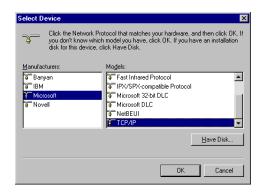
2. Insert the floppy disk labeled "Driver Diskette, " specify the location "A:\" and click "Next"



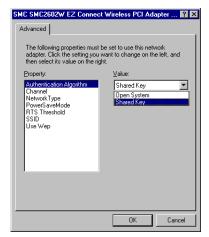
3. Click "Next" to copy files from the floppy disk.



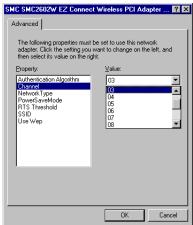
4. For Windows 2000, select the protocols you want to use and click "OK.".



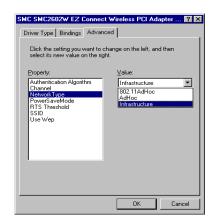
5. To communicate with SMC 11 Mbps Wireless devices set "Authentication Algorithm" to "Shared Key." Products from some other vendors use the setting "Open System." Use the same setting as other devices in your network.



6. To set up an ad hoc wireless LAN (refer to page 17), set "Channel" to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access point, the adapter will automatically set the channel to be the same as that used by the access point.



7. Set "Network Type" to "AdHoc" or "Infrastructure" depending on the type of network you want to connect to (See page 17).



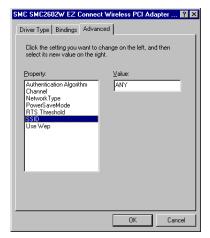
8. Enable the "PowerSaveMode" for reducing power loading. (Default: Disabled)



9. Set the RTS threshold to the same as that used by other devices in your network. (The default is 2432 which means "Disable")



10. Set the "SSID" identifier to the same as that used by the ad hoc work group or access point you want to connect to. (SMC2655W Access point default: WLAN)



11. For more secure data transmission, set the "Use Wep" to "128 - bit" or "64 - bit" to ensure wireless network security. The advance Wired Equivalent Privacy (WEP) is implemented in this card to prevent unauthorized access. The 128 bit setting gives a higher level of security but the setting must be the same for all clients in your wireless network. (Default: Disabled)



- 12.If you want to add more protocols after installation, go to control panel and double click on "Network"
- Select the "Configuration" tab and click "Add" to install the network protocols you want to use, such as IPX/SPX, NetBEUI or TCP/IP.

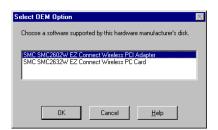
If you install TCP/IP, be sure to set the appropriate Gateway, DNS Server, and Domain for your network.

If you install an IPX/SPX-compatible protocol, then you also need to install the Client for NetWare Networks.

- 14. Click "File and Print Sharing..." to share files or printers.
- Click on the "Identification" tab on the Network dialog box, and specify your computer name and network workgroup.
- 16. Click "Close" in the Network dialogue box and the system will restart your computer.

Installation for Windows NT 4.0

- From the desktop, select "Control Panel," doubleclick "Network," click "Adapters," and then click the "Add" button on the Network dialog box.
- 2. Windows NT will present a list of all its supported adapters. Click "Have Disk" to continue.
- 3. Windows NT will ask for the drive/path containing the SMC2602W Windows NT drivers. Insert the SMC2602W Diskette into the floppy drive, then type "A:\" and click "OK."
- 4. Windows NT will attempt to locate an INF file in the specified path. If you have entered the path name correctly, Windows NT will copy the appropriate drivers to the Windows NT system. Select "SMC2602W EZ Connect Wireless PCI Adapter" and click "OK."



The Adapter Setup dialog box will appear. Configure the card as described below, and click "OK."



Mode - Set to AdHoc or Infrastructure, depending on the type of network you want to connect to (see page 17).

SS ID - Set the "SS ID" identifier to the same as that used by the ad hoc workgroup or access point you want to connect to. (SMC2655W Access point default: WLAN)

DS Channel - If you are setting up an ad hoc wireless LAN (see page 17), set the channel number to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access point, then use the same channel as that used by the access point.

RTS Threshold - Set the RTS threshold to the same as that used by the other devices in your network. (Default: Disabled)

Power Saving - Enable the "PowerSaveMode" for reducing power loading. (Default: Disabled)

WEP - For more secure data transmission, set the "Use Wep" to "128 - bit" or "64 - bit" to ensure wireless network security. The advance Wired Equivalent Privacy (WEP) is implemented in this card to prevent unauthorized access. The 128 - bit setting gives a higher level of security, but the setting must be the same as other clients in your wireless network. (Default: Disabled)

Authentication Algorithm - Set this to the same as other devices in your network. SMC devices use "Shared Key." Devices from some other vendors use "Open System."

 Select the Protocols tab and Click "Add..." to install the network protocols you want to use, such as IPX/SPX, NetBEUI or TCP/IP.

If you install an IPX/SPX-compatible protocol, then you also need to install the Client for NetWare Networks.

- Click on the "Identification" tab and specify your computer name and network workgroup.
- 8. Click "Close" and the system will restart your computer.

NETWORK CONFIGURATION AND PLANNING

SMC's EZ Connect Wireless Solution supports a standalone wireless network configuration, as well as an integrated configuration with 10 Mbps Ethernet LANs.

The SMC2602W PCI adapter can be configured as:

- Ad hoc for departmental or SOHO LANs
- Infrastructure for enterprise LANs

Network Topologies

Ad hoc Wireless LAN

An ad hoc wireless LAN consists of a group of computers, each equipped with a wireless adapter, connected via radio signals as an independent wireless LAN. Computers in a specific ad hoc wireless LAN must therefore be configured to the same radio channel.

An ad hoc wireless LAN can be used for a branch office or SOHO operation.

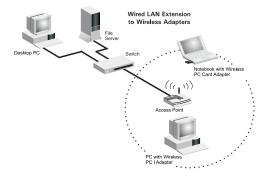


Infrastructure Wireless LAN

The SMC2602W can also provide access to a wired LAN for wireless workstations. An integrated wired and wireless LAN is called an Infrastructure configuration. A Basic Service Set (BSS) consists of a group of wireless PC users, and an access point that is directly connected to the wired LAN. Each wireless PC in this BSS can talk to any computer in its wireless group via a radio link, or access other computers or network resources in the wired LAN infrastructure via the access point.

The infrastructure configuration not only extends the accessibility of wireless PCs to the wired LAN, but also doubles the effective wireless transmission range for wireless PCs by passing their signal through one or more access points.

A wireless infrastructure can be used for access to a central database, or for connection between mobile workers, as shown in the following figure.



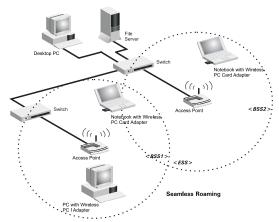
Setting the Communication Domain

Stationary Wireless PCs

The Basic Service Set (BSS) is the communication domain for each SMC2655W access point. For wireless PCs that do not need to support roaming, set the domain identifier (SSID) for the wireless card to the BSS ID of the access point you want to connect to. Check with your administrator for the BSS ID of the SM52655W access point he wants you to connect to.

Roaming Wireless PCs

A wireless infrastructure can also support roaming for mobile workers. More than one access point can be configured to create an Extended Service Set (ESS). By placing the access points so that a continuous coverage area is created, wireless users within this ESS can roam freely. All SMC2602W PCI adapters and SMC 2655W access points within a specific ESS must be configured with the same SS ID.



Before setting up an ESS for roaming, you need to choose a clear radio channel and ideal location for the SMC2655W access points to maximize performance. (Refer to "Using the Wireless LAN Utility" on page 19 for detailed information on installation and usage.)

Configuration and Diagnostic Utility

SMC's EZ Connect Wireless 2602W Wireless adapter provides free optional management software for quick network configuration and easy diagnostics. The diskette labeled "Utility," that comes with the package, contains a user-friendly interface for configuring the EZ Connect Wireless 2602W PCI Adapter.

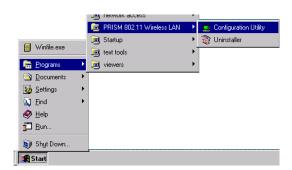
Utility Installation

To install the utility software:

- 1. Insert the "Utility" setup diskette in your PC's floppy drive (A:).
- 2. Select "run..." from Windows "Start" menu bar.
- 3. Click on "Browse..." to locate the "setup" file of this program.
- 4. Then click on "OK" to run the setup program.
- 5. Follow the on-screen instructions to finish installation.

Using the Wireless LAN Utility

Once the installation is completed, the configuration utility can be accessed by selecting the "Configuration Utility" icon from the "PRISM 802.11 Wireless LAN" folder.



This configuration software includes the following functions:

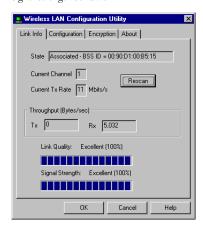
Link Information - Allows you to monitor network status.

Configuration - Allows you to configure parameters for the wireless adapter.

Encryption - Provides RC4 security control.

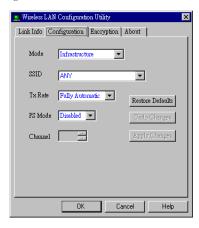
Link Information Screen

When you start the wireless LAN utility, the hardware information window for the SMC2602W is shown on the first folder of the utility windows as shown below. Click on the "Link Information" tab to monitor the network status of the wireless adapter, including the BSS ID, current channel, transmission rate used, transmission/receiving throughput, link quality, and signal strength condition.



Configuration Screen

The Configuration screen allows you to check and modify the configuration of the adapter. The userconfigurable parameters are shown as the following figure:

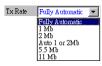




Mode - Set the station operation mode to "AdHoc" or "802.11 AdHoc" for network configurations that do not have any access points, or to "Infrastructure" for configurations with access points ("Infrastructure" is the default setting).



SSID - Input an SSID string that you want to connect to ("ANY" is the default setting).



Tx Rate - Indicates the communication rates. Select appropriate transmission speed to match your wireless LAN settings. (Default: Fully Automatic)



PS Mode - Enable the Power Saving Mode for reducing power loading. (Default: Disabled)



Channel - If you are setting up an ad hoc wireless LAN (see page 17), set the channel number to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access point, then the channel is automatically set to the channel of the access point that the adapter connects to.

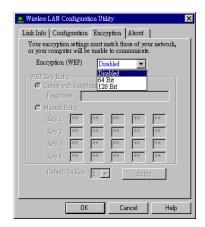
Encryption Screen

The WEP (Wired Equivalent Privacy) implemented in SMC's EZ Connect Wireless PCI Card is based on an RC4 encryption algorithm. The security keys provided to ensure data confidentiality are four 10 bit keys for the 64 bit Wep setting (first screen below) and one 26 - bit key for the 128 - bit Wep setting (second screen below). This WEP security protects your wireless LAN against eavesdropping and unauthorized access by hackers or unexpected intruders. If the WEP is in use, the WEP key is required for connecting to an access point or listening to messages that pass through the air.

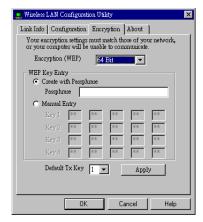
Encryption (WEP) - For more secure data transmission, set the "Encryption (WEP)" to "128 - bit" or "64 - bit" to ensure wireless network security. The advanced Wired Equivalent Privacy (WEP) is implemented in this card to prevent unauthorized access. The 128 - bit setting gives a higher level of security, but the setting must be the same as other clients in your wireless network. (Default: Disabled)

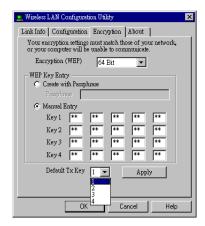
To use the WEP function, take the following steps:

1. Select "128 bit" or "64 bit" for the "WEP" field.



Enter your passphrase and click on the "Apply" button to create and save security keys. Otherwise, key in WEP keys manually in "Manual Entry" field.





Select one encrypted key (from Key 1 to Key
 as your default key.

TROUBLESHOOTING

Check the following troubleshooting items before contacting Technical Support.

PCI Compatibility

Some PCI computers are not self-configuring and require you to perform some or all of the following functions by motherboard jumper changes and/or BIOS Setup program configuration:

- Make sure your BIOS correctly supports the PCI Local Bus Specification v2.0 or later and upgrade your computer BIOS to the latest version.
- Verify that the PCI slot is an enabled bus-master slot and not a slave PCI slot. In some computers the PCI slot must be configured to enable bus mastering. Refer to your PC's manual and check the PCI BIOS Setup program to be sure the PCI slot is an enabled bus-master slot.
- In some computers, you may be required to disable Plug 'n Play (PnP) in the BIOS Setup program if resources are not properly assigned between installed cards.
- Some computers may require you to reserve interrupts and memory addresses for installed ISA cards to prevent PCI adapters from using the same settings. Refer to your PC's manual and check the PCI BIOS Setup program configuration options for ISA cards.
- Make sure the PCI slot is configured to support INTA
- Be sure that INTA for the slot is assigned to a free interrupt (IRQ) number.
- If it still does not work, remove the wireless adapter. Delete CW10.sys from c: \windows\system. Then go to "Control Panel" and delete the adapter from your network configuration menu. Restart your PC and reinstall the card as described on page 5.

NETWORK CONNECTION PROBLEMS

If the LED on the PCI adapter does not light, or if you can't access any network resources from the computer. Check the following:

- Make sure the correct software driver is installed for your operating system. If necessary, try reinstalling the driver.
- Make sure the computer and other network devices are receiving power.
- The access point you want to attach to may be defective. Try using another SMC2655W access point.
- If you cannot access a Windows or NetWare service on the network, check that you have enabled and configured the service correctly. If you cannot connect to a particular server, be sure that you have access rights and a valid ID and password.
- If you cannot access the Internet, be sure you have configured your system for TCP/IP.

If your wireless station cannot communicate with a computer in the Ethernet LAN when configured for Infrastructure mode, check the following:

- Make sure the SMC2655W access point which the station associated with is powered on.
- Make sure your wireless station is configured with the same operating radio channel as the SMC2655W.
- If you still can't connect, change the SMC2655W access point and all the stations within the BSS to another radio channel.
- Make sure the BSS ID is the same as the SMC2655W for a station with roaming disabled, or the SS ID is the same as the SMC2655W for a station with roaming enabled.

SMC Networks 802.11b Wireless Product Maximum Distance Table

Important Notice:

Maximum distances posted below are actual tested distance thresholds. However, there are many variables such as barrier composition and construction and local environmental interference that may impact your actual distances and cause you to experience distance thresholds far lower than those we post below. If you have any questions or comments regarding the features or performance of this product, or if you'd like information regarding our full line wireless products, you can visit us on the web of www.smc. com or you can call us toll-free at 800.SMC.4YOU. SMC Networks stands behind this and every product we sell with a 30 day satisfaction guarantee and with a limited-lifetime warranty.

SMC	Wireless Pro	oducts		
Maxir	num Distanc	e Table		
	Speed and Distance Ranges			
Environmental Condition	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
Open Environment: A "line-of-site" environment with no interference or obstructions between Access Point and Users.	160 m (524 ft)	270 m (886 ft)	400 m (1312 ft)	457 m (1500 ft)
Semi-Open Environment: An environment with no major obstructions such as walls or privacy cubicles between Access Point and users.	50 m (164 ft)	70 m (230 ft)	90 m (295 ft)	120 m (394 ft)
Closed Environment: A typical office or home environment with floor to ceiling obstructions between Access Point and users.	25 m (82 ft)	35 m (115 ft)	45 m (148 ft)	55 m (180 ft)

COMPLIANCES

FCC Class B Certification

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- 1. This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Warning! This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

CSA Statement (Canada)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dens le Règlement sur le brouillage radioélectrique édicté par l'Industrie.

CE Mark Declaration of Conformance

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR-22(1985) IEC61000-4-2(2000) IEC61000-4-3(2000)	Class B 4kVCD/8kVAD 3V/m
line)	IEC61000-4-4(2000)	1kV- (power
11110)	IEC 61000-4-6(2000) IEC 61000-4-11(2000)	3Vrms 3Vrms

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE Mark accordingly.

SPECIFICATIONS

Functional Criteria

Data Rate 1, 2, 5.5, 11 Mbps Transmission Mode Half duplex

IEEE 802.11b - wireless Network Connection Operating Range Up to 30 m (100 ft) at 11 Mbps

Up to 450 m (1500 ft) at 5.5 Mbps or

lower

INTA Interrupt

Radio Signal

Signal Type Direct Sequence Spread-Spectrum (DSSS) Operating Frequency USA, Canada and Europe (ETSI):

2.400-2.4835 GHz,

Japan: 2.400-2.497 GHz 1, 2, 5.5 Mbps: -80 dBm, Sensitivity 11 Mbps: -76 dBm (minimum)

CCK, BPSK, QPSK +13 dBm (minimum)

Physical Characteristics

Modulation

Output Power

480 mA @ 5V transmit, Power Consumption 360 mA @ 5V receive

178 x 120 x 20 mm (7 x 4.7 x 0.8 in) Dimensions

Weight 136 g (4.8 oz)

Antenna Built-in LED Indicator

ADHoc, Infrastructure (browsing AP

link)

Host Interface PCI Specification 2.1 Standards Conformance IEEE 802.11b

Environmental

Operating: 0 to 50°C (32 to 122°F) Temperature

Storage: 0 to 70°C (32 to 158°F_ 5 to 80% (non-condensing) Humidity Vibration/Shock/Drop IEC 68-2-34, IEC 68-2-27,

IEC 68-2-32

Certification

CE Mark EN55022 Class B, EN 55024,

IEC 61000-4-2/3/4/6/11

FCC Class B, ETS 300-328, Emissions

RCR STD-33 A

Software Drivers

NDIS Drivers Windows 95

Windows 98 Windows ME Windows 2000 Windows NT 4.0

FOR TECHNICAL SUPPORT, CALL:

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